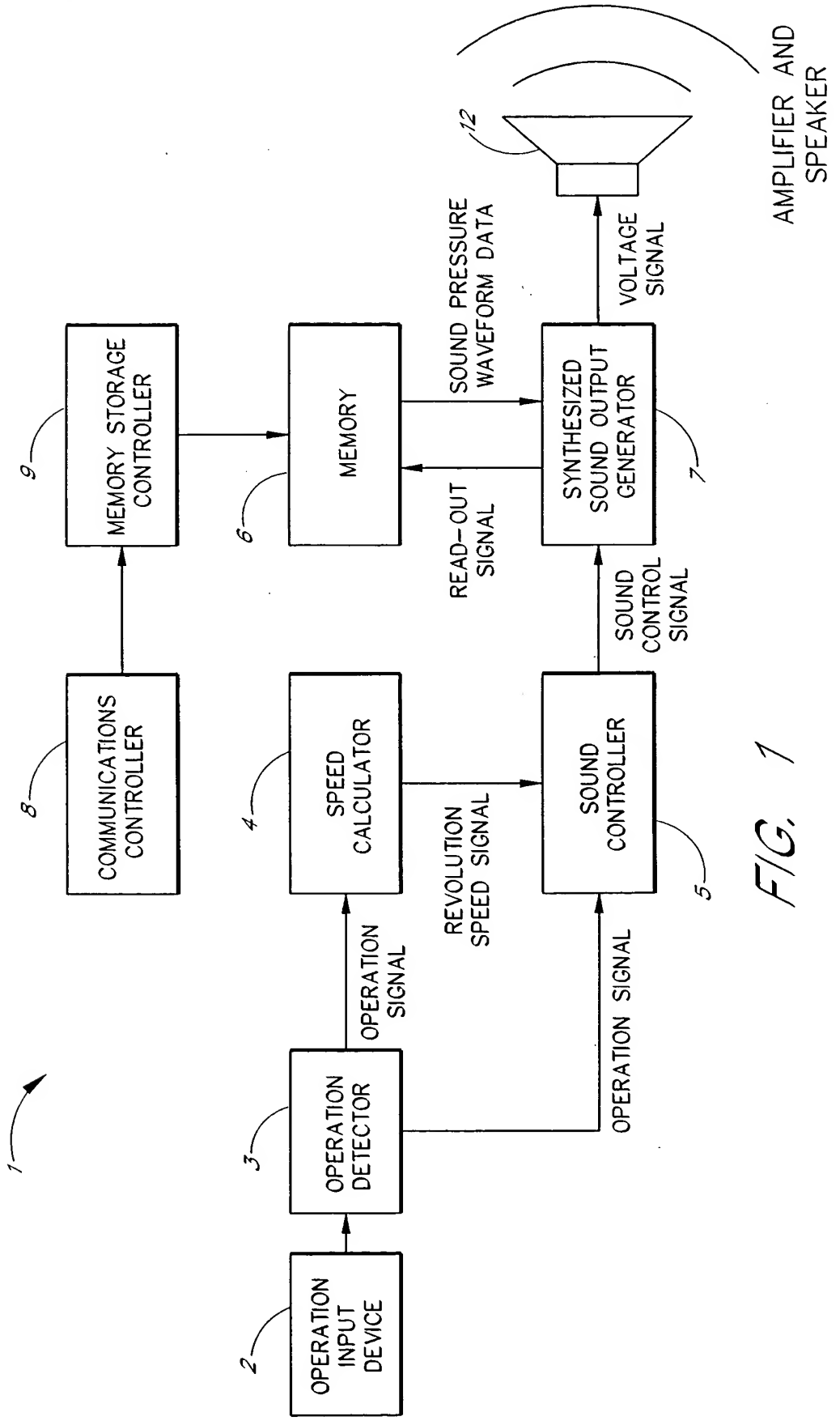
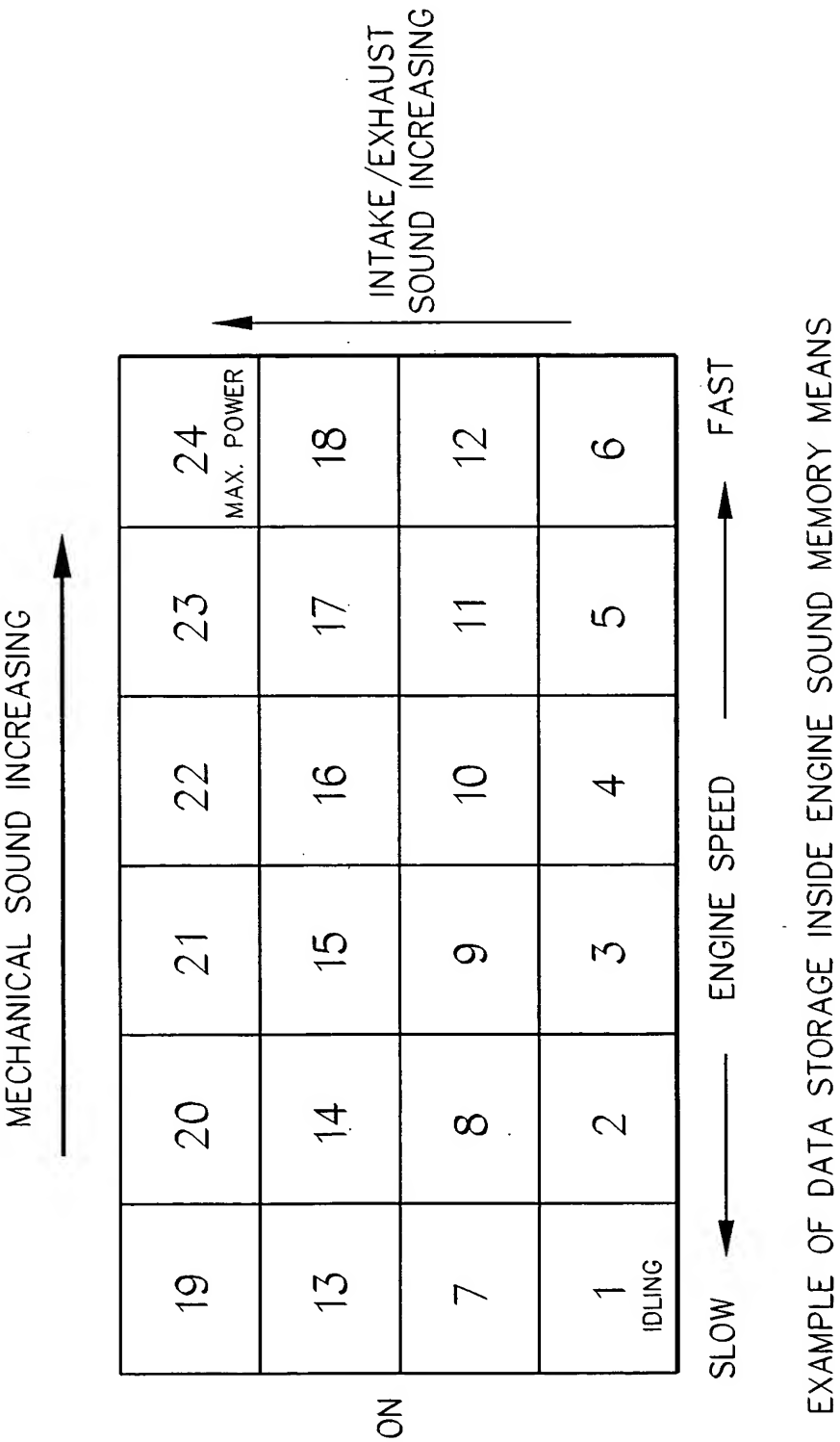
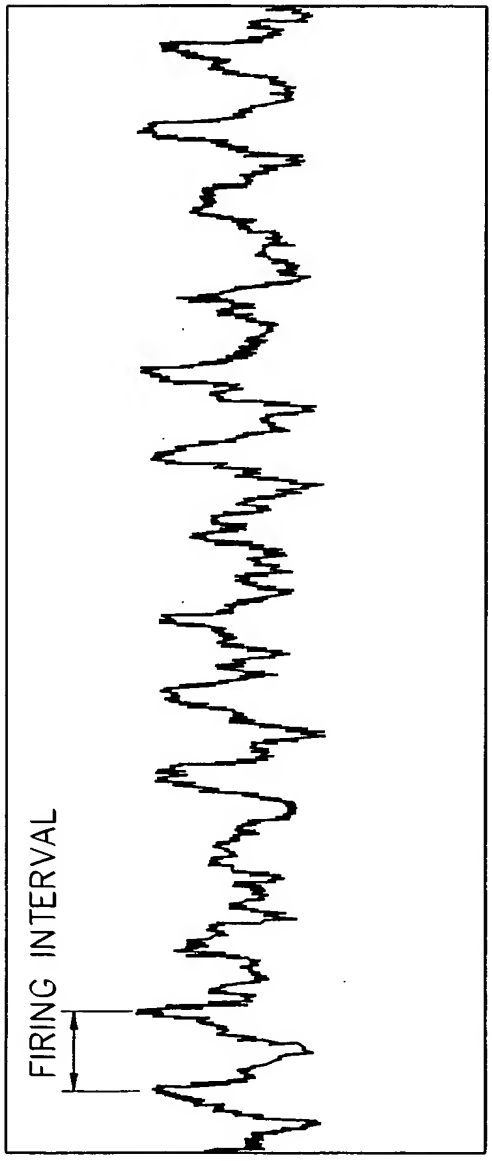

1
OPERATION INPUT DEVICE
2
OPERATION DETECTOR
3
SPEED CALCULATOR
4
SOUND CONTROLLER
5
MEMORY
6
SYNTHESIZED SOUND OUTPUT GENERATOR
7
COMMUNICATIONS CONTROLLER
8
MEMORY STORAGE CONTROLLER
9
AMPLIFIER AND SPEAKER
12
OPERATION SIGNAL
OPERATION SIGNAL
REVOLUTION SPEED SIGNAL
SOUND CONTROL SIGNAL
READ-OUT SIGNAL
SOUND PRESSURE WAVEFORM DATA
VOLTAGE SIGNAL

FIG. 1



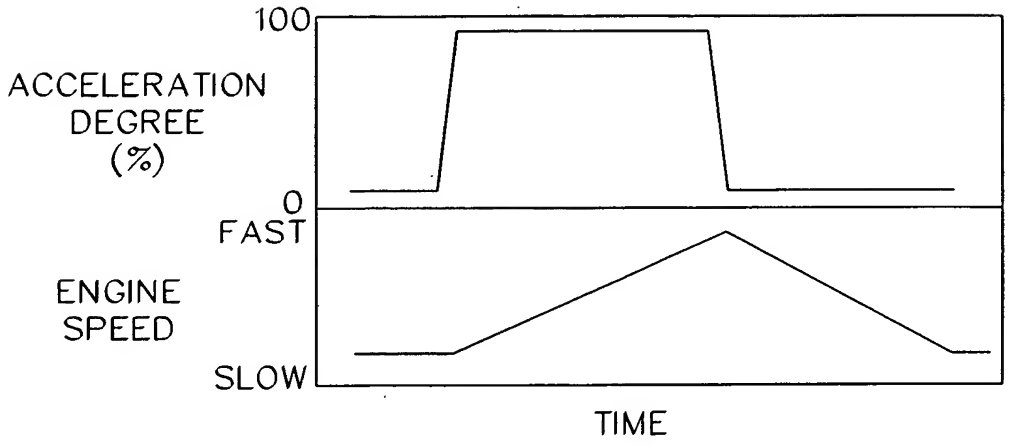
EXAMPLE OF DATA STORAGE INSIDE ENGINE SOUND MEMORY MEANS

FIG. 2



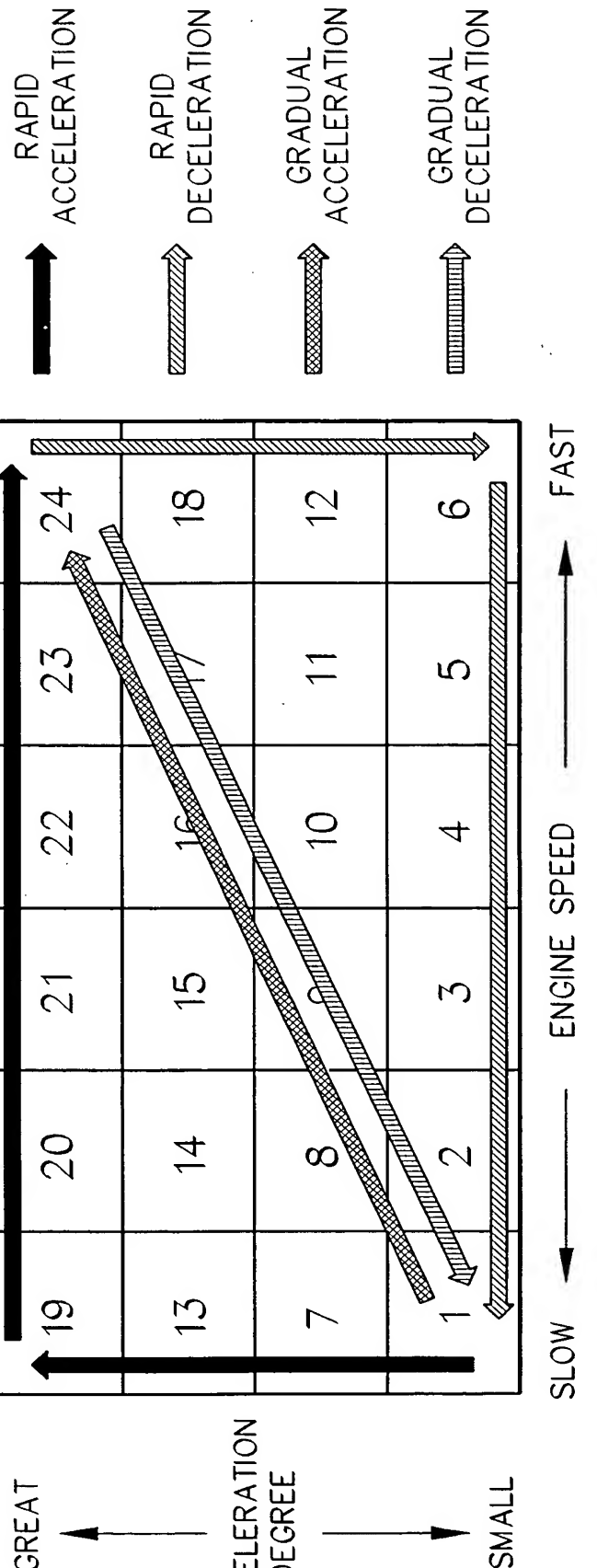
EXAMPLE OF ENGINE SOUND PRESSURE WAVEFORMS

FIG. 3



FLUCTUATION IN RAPID
ACCELERATION/DECELERATION PERIODS

FIG. 4



FLUCTUATION IN RAPID ACCELERATION/DECELERATION AND GRADUAL ACCELERATION/DECELERATION

FIG. 5

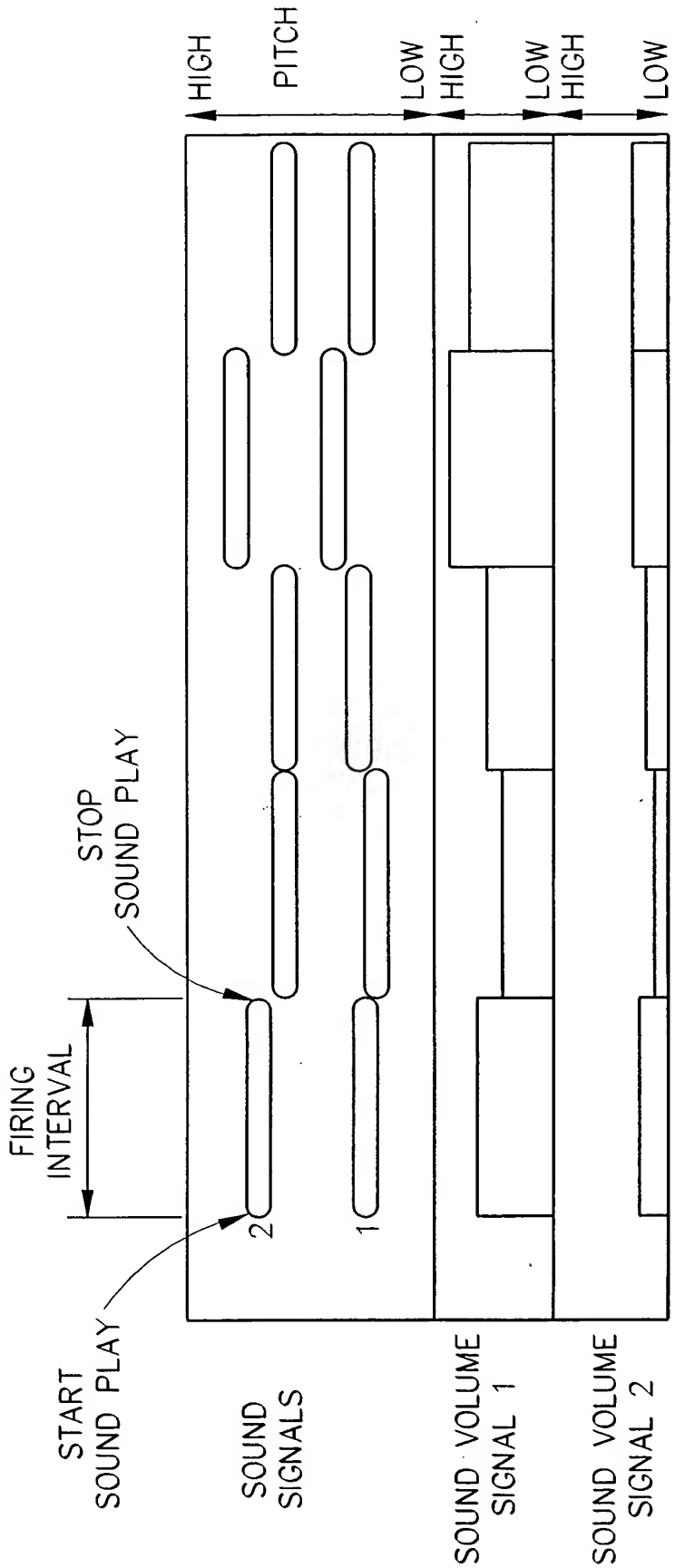

HIGH
PITCH
LOW
HIGH
LOW
HIGH
LOW
STOP
SOUND PLAY
FIRING
INTERVAL
START
SOUND PLAY
2
1
SOUND
SIGNALS
SOUND VOLUME
SIGNAL 1
SOUND VOLUME
SIGNAL 2
TIME
EXAMPLE OF SOUND SIGNAL

FIG. 6

EFFECT IN REPRODUCTION RATE CHANGE

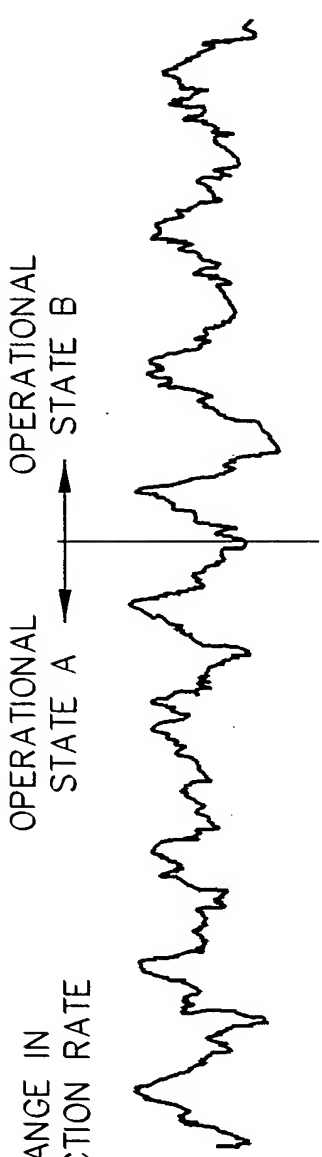


FIG. 7A

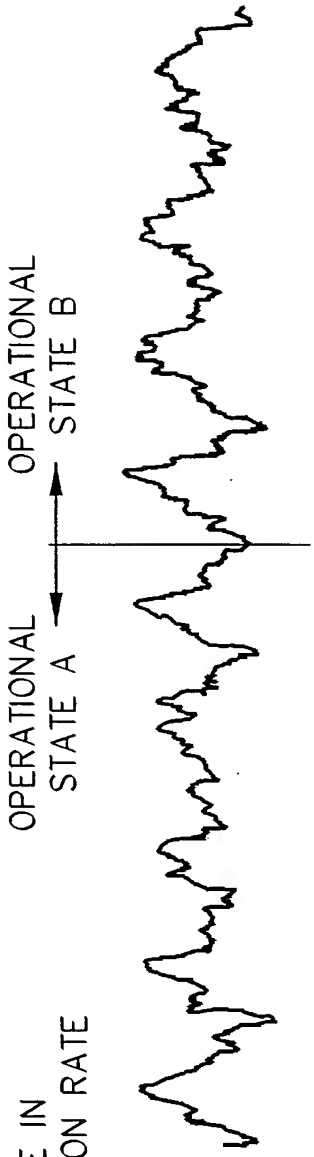


FIG. 7B

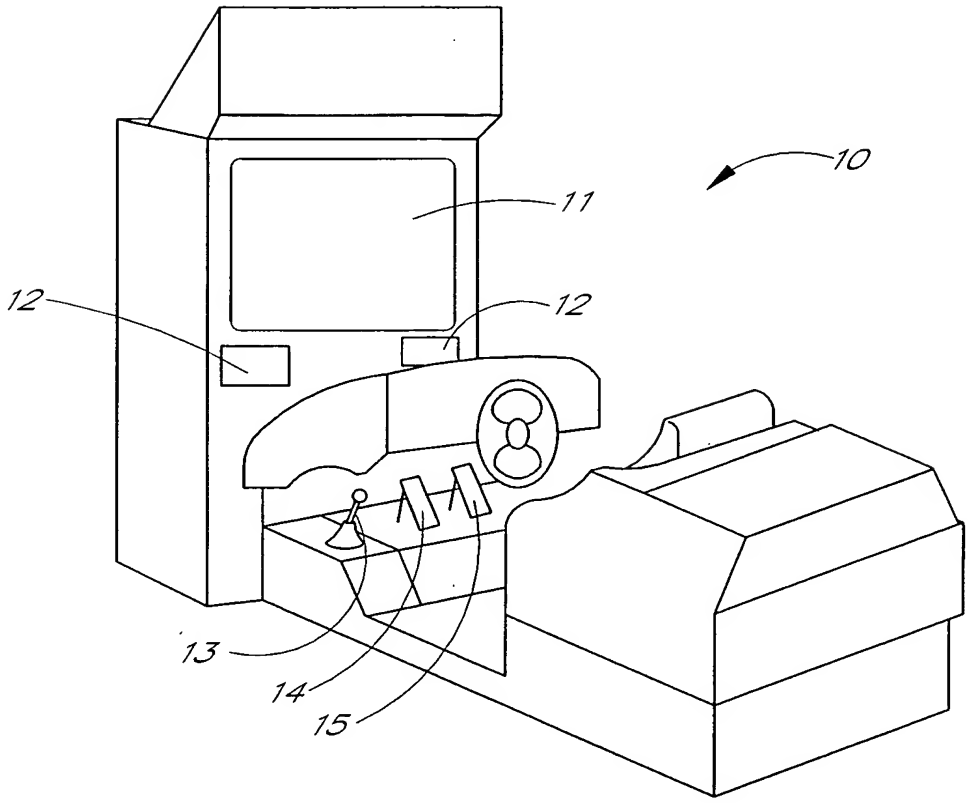


FIG. 8

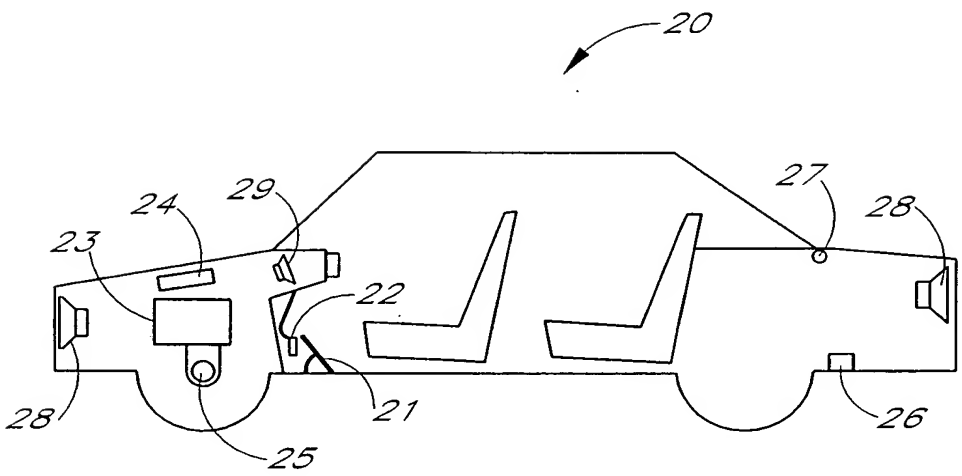


FIG. 9

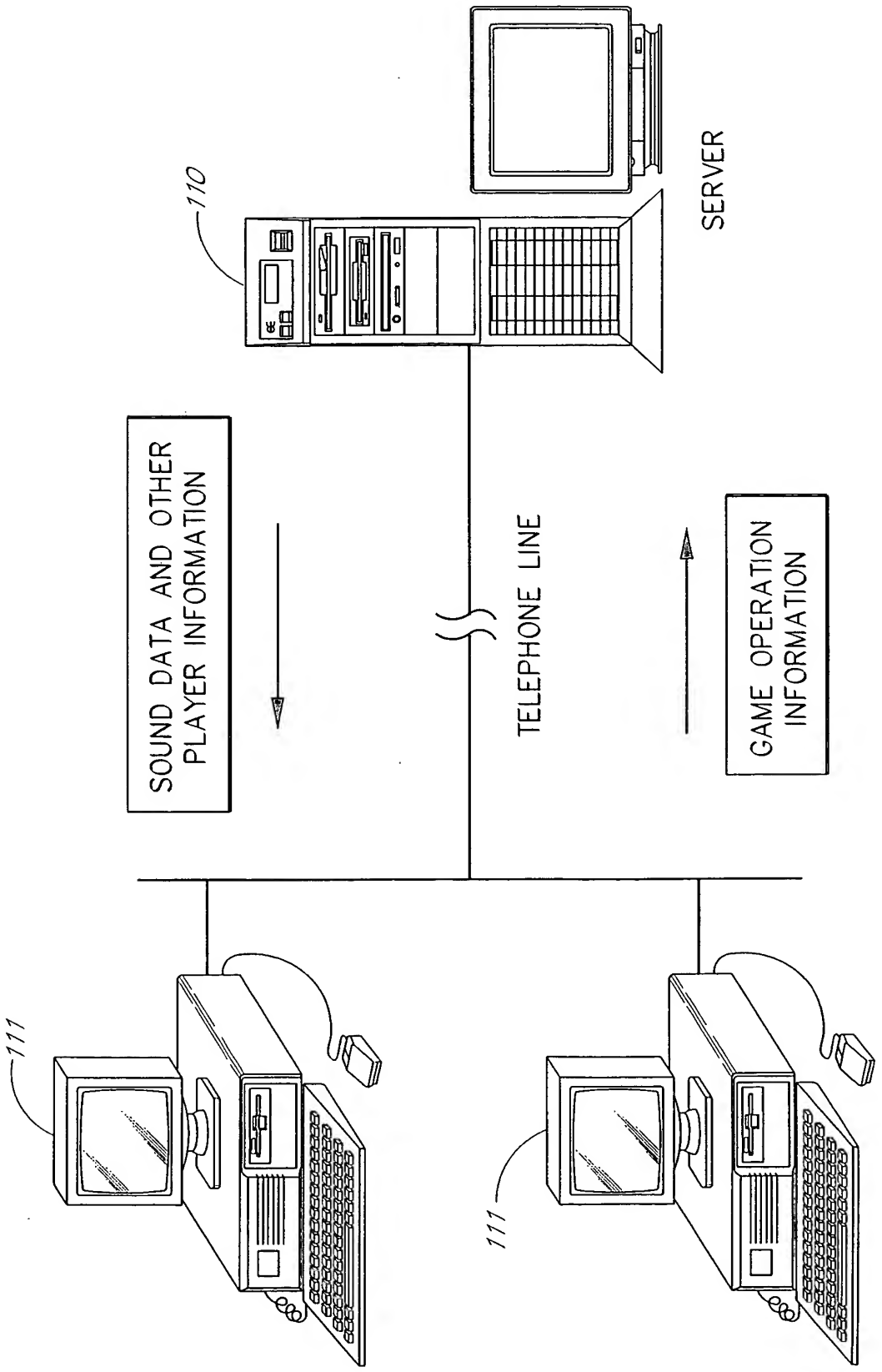

110
SERVER
SOUND DATA AND OTHER PLAYER INFORMATION
TELEPHONE LINE
GAME OPERATION INFORMATION
111
111

FIG. 10

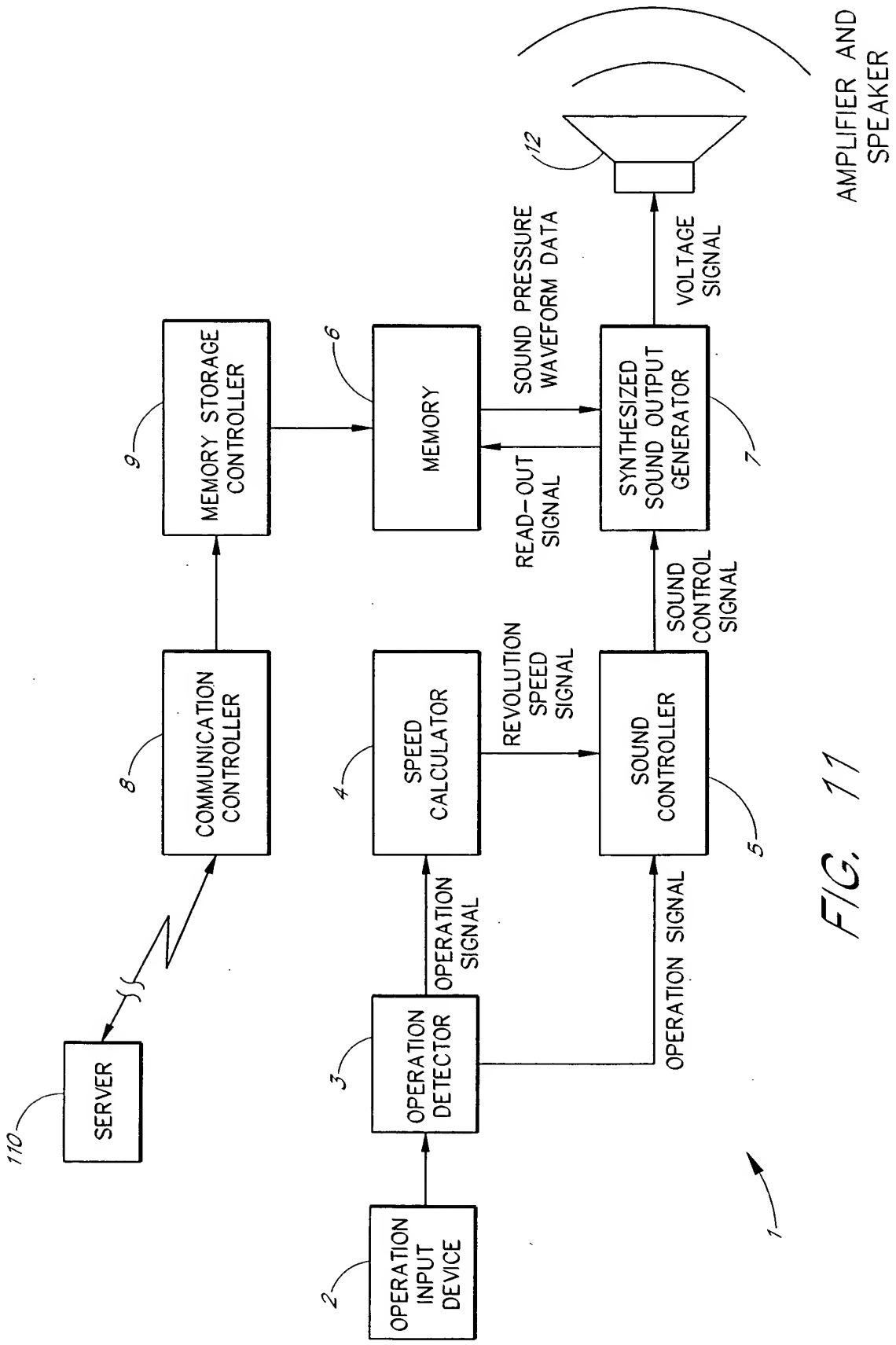

OPERATION INPUT DEVICE
2
OPERATION DETECTOR
3
SPEED CALCULATOR
4
SOUND CONTROLLER
5
MEMORY
6
SYNTHESIZED SOUND OUTPUT GENERATOR
7
COMMUNICATION CONTROLLER
8
MEMORY STORAGE CONTROLLER
9
SERVER
110
OPERATION SIGNAL
REVOLUTION SPEED SIGNAL
OPERATION SIGNAL
SOUND CONTROL SIGNAL
READ-OUT SIGNAL
SOUND PRESSURE WAVEFORM DATA
VOLTAGE SIGNAL
12
AMPLIFIER AND SPEAKER
1

FIG. 11

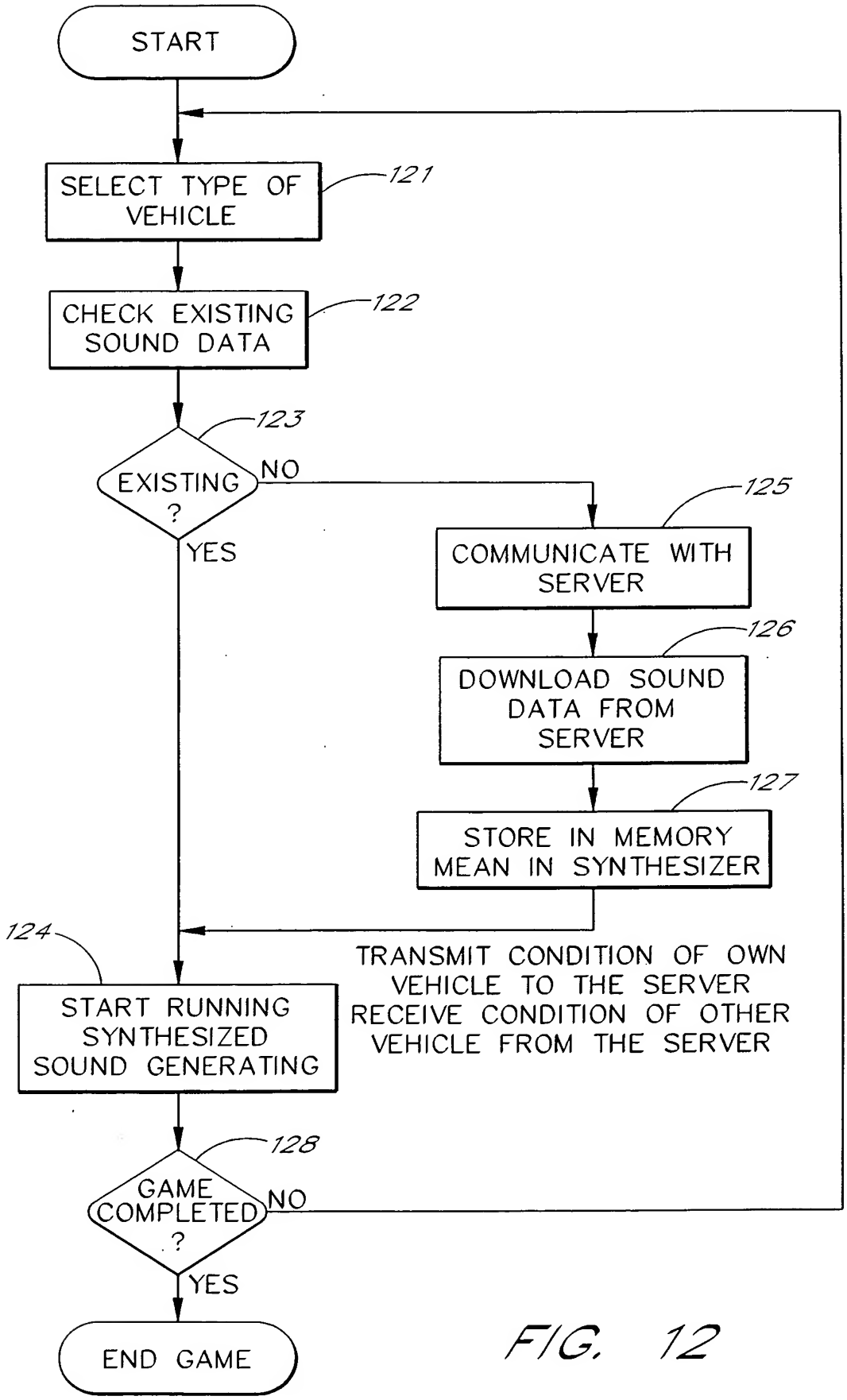

START
SELECT TYPE OF VEHICLE
121
CHECK EXISTING SOUND DATA
122
123
EXISTING ?
NO
YES
125
COMMUNICATE WITH SERVER
126
DOWNLOAD SOUND DATA FROM SERVER
127
STORE IN MEMORY MEAN IN SYNTHESIZER
124
START RUNNING SYNTHESIZED SOUND GENERATING
TRANSMIT CONDITION OF OWN VEHICLE TO THE SERVER
RECEIVE CONDITION OF OTHER VEHICLE FROM THE SERVER
128
GAME COMPLETED ?
NO
YES
END GAME

FIG. 12

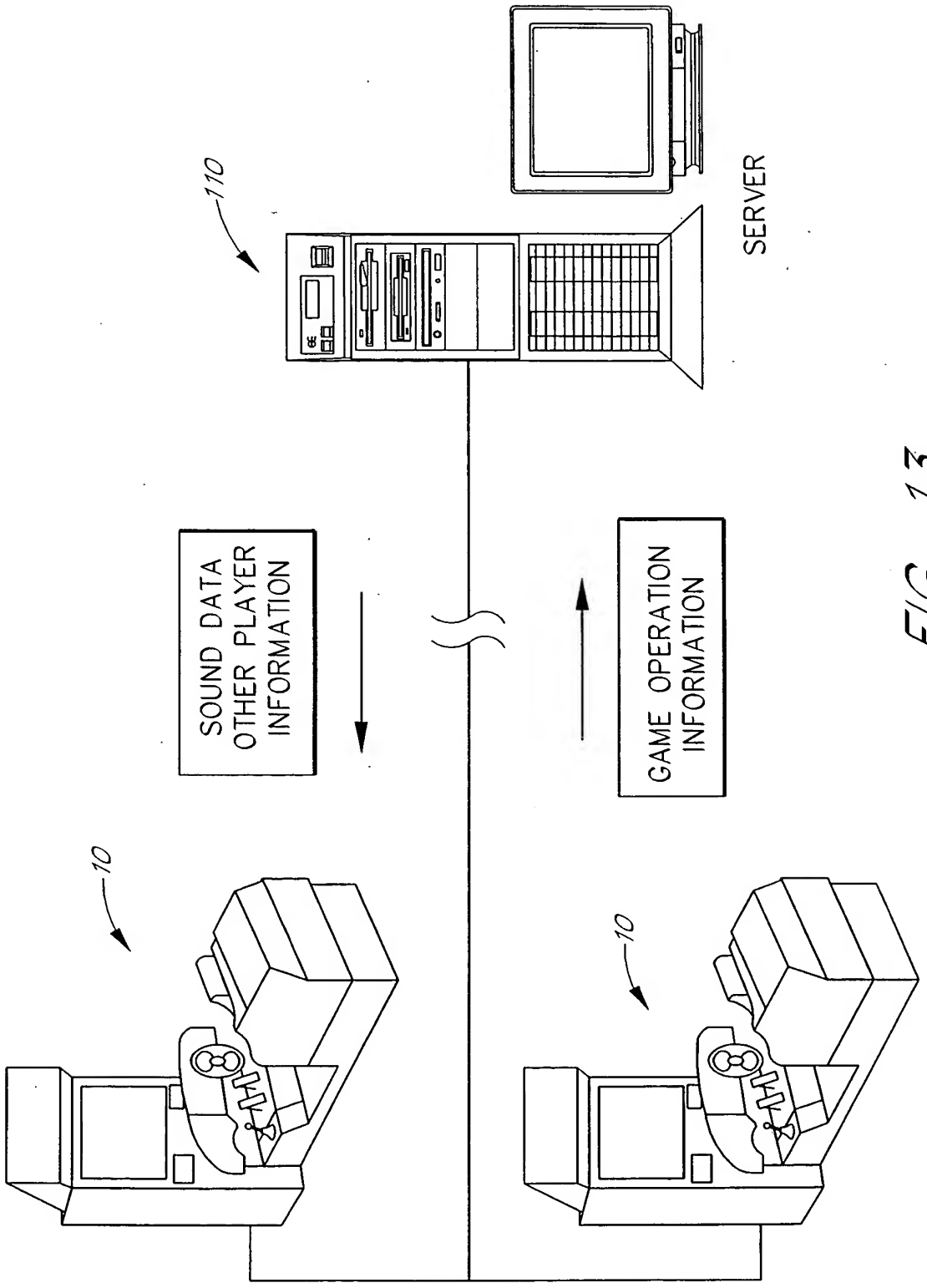

110
SERVER
SOUND DATA
OTHER PLAYER
INFORMATION
GAME OPERATION
INFORMATION
10
10

FIG. 13